VA-HUD APPROPRIATIONS/Space Station Termination

SUBJECT: **Departments of Veterans Affairs and Housing and Urban Development, and Independent Agencies Appropriations Bill for fiscal year 1996 . . . H.R. 2099. Bumpers amendment No. 2776 to the committee amendment on page 158, lines 13-14.**

ACTION: AMENDMENT REJECTED, 35-64

SYNOPSIS: As reported, H.R. 2099, the Departments of Veterans Affairs and Housing and Urban Development, and Independent Agencies Appropriations Bill for (fiscal year) FY 1996, will provide a net of $80.98 billion in new budget authority, which is $8.9 billion under the Administration's request, $1.3 billion more than provided in the House-passed bill, and $8.9 billion less than provided in FY 1995.

The committee amendment on page 158, lines 13-14, would change the appropriation for National Aeronautics and Space Administration (NASA) activities related to human space flight from $5.450 billion to $5.338 billion.

The Bumpers amendment would reduce the appropriation for human space flight activities by $1.833 billion to $3.504 billion, and would provide that none of the funds in the bill would be expended on the Space Station Program except to meet termination costs.

Those favoring the amendment contended:

To date, we have spent nearly $12 billion on building the Space Station. Each year, the cost to complete it goes up, and each year the expectations of what it may achieve go down. We started ot missions--a staging base, a manufacturing facility, a space-based observatory, a transportation node, a service facility, an assembly facility, a storage facility, and a research facility. All but the last of those missions have been abandoned.

Senators, and NASA scientists, still make claims that it will make a wonderful microgravity research station. However, nearly every expert we have consulted has said that having a manned microgravity research station makes no sense because the movement of the astronauts would ruin the experiments, and further, that doing any microgravity research, whether manned or unmanned, is

(See other side)

YEAS (35)

Republicans (12 or 23%)	Democrats (23 or 50%)
Abraham	Baucus
Ashcroft	Bradley
Brown	Bryan
Chafee	Bumpers
Cohen	Byrd
Faircloth	Conrad
Jeffords	Dorgan
Lugar	Exon
Snowe	Feingold
Specter	Harkin
Thomas	Hollings
Warner	Kennedy
	Kerrey
	Kerry
	Kohl
	Lautenberg
	Leahy
	Levin
	Moynihan
	Nunn
	Pryor
	Simon
	Wellstone

NAYS (64)

Republicans (41 or 77%)		Democrats (23 or 50%)
Bennett	Hutchison	Akaka
Bond	Inhofe	Biden
Burns	Kassebaum	Bingaman
Campbell	Kempthorne	Boxer
Coats	Kyl	Breaux
Cochran	Lott	Daschle
Coverdell	Mack	Dodd
Craig	McCain	Feinstein
D'Amato	McConnell	Ford
DeWine	Murkowski	Glenn
Dole	Nickles	Graham
Domenici	Packwood	Heflin
Frist	Pressler	Inouye
Gorton	Roth	Johnston
Grams	Santorum	Lieberman
Grassley	Shelby	Mikulski
Gregg	Simpson	Moseley-Braun
Hatch	Smith	Murray
Hatfield	Stevens	Pell
Helms	Thompson	Reid
	Thurmond	Robb
		Rockefeller
		Sarbanes

NOT VOTING (1)

Republicans (1)	Democrats (0)
Gramm-[2]	

EXPLANATION OF ABSENCE:
1—Official Buisiness
2—Necessarily Absent
3—Illness
4—Other

SYMBOLS:
AY—Announced Yea
AN—Announced Nay
PY—Paired Yea
PN—Paired Nay

of marginal value. As Dr. Bloembergen of Harvard summed it up, "microgravity is of microimportance." The American Cancer Society has informed us that it sees no valid justification for favoring space-based cancer research over research on the ground; the American Physical Society has said that medical advances would be unlikely; the Arthritis Foundation has asked that the money for the Space Station be spent building laboratories on Earth instead. Further, the Space Studies Board of the National Research Council has said that if we are going to conduct microgravity research, we can do all that is necessary at a fraction of the cost through an expanded program of Spacelab missions and of free flier experiments. Not only will the Space Station not result in discoveries in areas being researched, it will not result in spin-off discoveries. Frequently, Senators like to claim that space research results in unintended discoveries. As the Wall Street Journal recently reported, though, many of the spin-off products that so many people think came from space research, like velcro, simply did not.

There is one mission for the Space Station that is not commonly discussed. That mission is to gather data on maintaining human life during long-duration space flights in preparation for a flight to Mars. As Dr. Carl Sagan, physicist and author, recently put it, "The only tangible and coherent goal of a space station is eventual human missions to near-Earth asteroids, Mars, and beyond. Historically, NASA has been cautious about stating this fact clearly, probably for fear that Members of Congress would throw up their hands in disgust." That disgust would be from the expected $500 billion cost of a manned space flight to Mars.

Dr. Sagan, many NASA scientists, and we do not doubt many of our colleagues favor a manned space flight to Mars. We absolutely do not. We have too many pressing social needs at home. Our Republican colleagues are intent on slashing welfare benefits, on making enormous cuts in Medicare, on cutting back on education, and on ending public funding for the arts. They want to do away with all of the most noble spending programs of the Federal Government. At the same time, they want to cut taxes on the wealthy instead of increasing them as they should. It is the most absolutely misguided set of priorities we can imagine. Going to Mars will not require any new technological achievements. We already have the capability; the question is are we foolish enough to assume the expense. It would cost $12,880 per pound to send a manned spacecraft to Mars. Every pound, including food and water, would cost that amount. Chicken that can be bought at the grocery store for 59 cents per pound would cost $12,880 per pound to send to Mars. Even for the Federal Government, that is quite a markup.

Scientists know that a space station will not lead to breakthroughs in medicine, metallurgy, or other fields. They also know that the supposed spin-offs that have come from space research have been exaggerated. When all is said and done, this funding is really about whether we are willing to spend $500 billion to send an astronaut to Mars. We are not, and thus favor the Bumpers amendment.

Those opposing the amendment contended:

Our dear colleague from Arkansas is as wrong this year about the Space Station Program as he was last year as he was the year before as he was for about the past 6 years. Each year, he lengthily mischaracterizes the value of the program, and opines instead for increased spending for his favorite social welfare programs. This year, he has added a few new twists, complaining about Republican plans to balance the budget at the same time as he talks about how fiscally irresponsible it is to fund the Space Station, and saying that he has figured out that the only real reason scientists want to build it is because they see it as the first step in a $500 billion program to send someone to Mars.

Researchers who have been conducting microgravity experiments in space already would be surprised to hear that having a permanent space station on which they could conduct much longer experiments would be useless. After all, they have already made several key advances. In the pharmaceutical field, the Hauptman Institute and Eli Lili are currently applying knowledge gained from space-grown crystals to design a nontoxic drug that will bind insulin, improving the treatment of diabetic patients. Vertex Pharmaceuticals is using space-grown crystals of Elastase to improve treatment for emphysema. The Marshall Space Flight Center, using space-based research, recently published the structure of a major human antibody that recognizes the AIDS virus. Other pharmaceutical companies that are working with NASA, and investing money in space research, include Bristol-Myers Squibb, SmithKline Beecham, BioCryst, DuPont Merck, Eastman Kodak, Schering-Plough, and Upjohn.

Other key areas of space research that are already yielding tangible benefits include metallurgy and combustion science. For metallurgy, Dr. Glicksman of the Rensselaer Polytechnic Institute recently conducted space experiments that led to new understandings of how the structure of metal forms, which will aid in the development of stronger or more corrosion-resistant metal alloys, and Dr. Szekely of the Massachusetts Institute of Technology developed new mathematical models based on space experiments that will improve predictions of the behavior of metals during processing. For combustion science, the advances promise to be spectacular. Combustion accounts for approximately 85 percent of the world's energy production as well as a significant fraction of the world's atmospheric pollution. Breakthroughs in this field could yield tremendous benefits. For instance, just a 2-percent increase in burner efficiency would save the United States $8 billion per year. NASA just applied for a patent on one of its recent advances from space-based research on combustion--a device that improves air quality by reducing nitrous oxides.

A whole new field of medical research that cannot be conducted on the ground was recently started with the development of NASA's space-based bioreactor. This reactor has been used successfully to grow three-dimensional tissue models of breast and ovarian cancer. Using conventional culture techniques no one has ever before been able to produce masses that resemble tumors. Little progress has been made in treating ovarian cancer in the past 30 years. Microgravity research, especially the type of extended

research possible on the Space Station, may well finally lead to advances in treatment.

We of course do not know what exactly we will discover by creating the Space Station. Over the years, a large number of the most astonishing and helpful scientific breakthroughs that have come from space research have been found to have many applications beyond the purposes for which they were originally intended. One example that most Senators are familiar with is the development of nonflammable clothing for astronauts, which has certainly found an additional use--nonflammable baby pajamas--that all Senators applaud. Literally hundreds of everyday products were derived from America's space programs.

One very recent example of a spin-off advance comes from the much-maligned Hubble telescope. Twenty years ago, we invested in digital technology, despite all the naysayers who said we were wasting our money. When the Hubble telescope was found to be defective, that digital technology was further developed especially for the Hubble, to enable astronomers to distinguish very minute points of light. That technology has now been applied to medical imaging, and as a result doctors are able to detect breast cancer tumors five times better than they formerly were able to detect them.

Our colleagues have complained, as they have complained in prior years, that the United States cannot afford to build the Space Station. In response, spending on the Space Station costs less than one-seventh of 1 percent of the Federal budget. Further, this Congress has just passed a budget proposal that will balance the budget by restraining the growth in the programs that are threatening to bankrupt America. Those social spending programs, which many of our colleagues so dearly love, must be brought under control or no one will get any money when the United States' economy collapses. We emphatically reject that we are in any way being profligate in providing funding for the Space Station. This program is on-schedule and on-budget. The $94 billion, 10-year cost estimate that the General Accounting Office (GAO) gave is misleading. The GAO mistakenly included $51 billion that NASA has budgeted for shuttle missions, and it also included the costs of the experiments that will be conducted on the Space Station. The 10-year costs of building the station will be a much smaller $26.2 billion. The station is already one-fifth built, it will be launched in 1997, and it will be fully operational by 2002. Further, significant financial and scientific support is coming from countries around the world. Finally, for anyone who believes that NASA has escaped the budget ax that has fallen on the rest of the Federal Government, we suggest that NASA has led the way in fiscal responsibility. Under the leadership of Dr. Golden, NASA conducted a zero-based budgeting exercise that resulted in an in-house workforce reduction of 1,000, or nearly 50 percent. NASA has slashed costs in order to be able to afford the Space Station. The Space Station is NASA's top priority.

Senators should always support research, in tight budgetary times as well as in times of plenty. Research is an investment in our children's future--the benefits of learning and advancing end up making everyone better off. The Space Station Program represents only a very tiny part of the overall Federal budget, but in our opinion, it is one of the best Federal programs ever. We are confident that most of our colleagues agree, and will therefore join us in defeating the Bumpers amendment.